IN THE CLAIMS

1-9. (Canceled)

10-12. (Canceled)

13. (Previously Presented) A method of fabricating an interconnect supported by a semiconductor structure in a chemical vapor deposition reaction chamber, comprising:

flowing a first titanium-containing precursor in the chemical vapor deposition reaction chamber;

flowing nitrogen in the chemical vapor deposition reaction chamber simultaneously with flowing the titanium-containing precursor to form a first layer of titanium nitride on the semiconductor structure;

flowing a second titanium-containing precursor in the chemical vapor deposition reaction chamber;

flowing at least one gas selected from the group consisting of ammonia and nitrogen trifluoride in the chemical vapor deposition reaction chamber simultaneously with the step of flowing the second titanium-containing precursor to form a second layer of titanium nitride on the first layer of titanium nitride wherein the second layer of titanium nitride comprises a polycrystalline orientation that comprises a mixture of 1:1 of <111> and <200> oriented grains; and

flowing an aluminum-containing precursor in the chemical vapor deposition reaction chamber to form an aluminum film of small grain size on the second layer of titanium nitride.

14. (Original) The method of claim 13, further comprising the step of forming a titanium silicide layer on the semiconductor structure prior to the step of flowing the first titanium-containing precursor.

15. (Original) The method of claim 13, wherein the first and second titanium-containing precursors are selected from the group consisting of: titanium tetrachloride, tetrakisdimethylamido titanium and trimethylethylenediamino titanium.

16. (Original) The method of claim 13, wherein the aluminum-containing precursor is selected from the group consisting of: trimethylaluminum (TMA), dimethylaluminum hydride (DMAH), triisobutylaluminum (TIBA), triethylaluminum (TEA), diethylaluminum hydride (DEAH), monomethylaluminum hydride (MMAH), dimethylethylalane (DMEHA1), and dimethylethylamide (DMEHA2).

17-36. (Canceled)

37-41. (Canceled)

42. (Previously Presented) A method of fabricating an interconnect supported by a semiconductor structure in a chemical vapor deposition reaction chamber, comprising:

flowing a first titanium-containing precursor in the chemical vapor deposition reaction chamber;

flowing nitrogen in the chemical vapor deposition reaction chamber simultaneously and flowing the titanium-containing precursor to form a first layer of titanium nitride on the semiconductor structure;

flowing a second titanium-containing precursor in the chemical vapor deposition reaction chamber;

flowing at least one gas selected from the group consisting of ammonia and nitrogen trifluoride in the chemical vapor deposition reaction chamber simultaneously with flowing the second titanium-containing precursor to form a second layer of titanium nitride on the first layer of titanium nitride nitride wherein the second layer of titanium nitride comprises a polycrystalline orientation that comprises a mixture of 1:1 of <111> and <200> oriented grains; and

flowing an aluminum-containing precursor in the chemical vapor deposition reaction chamber to form an aluminum film having a small grain size on the second layer of the titanium nitride.

43. (Previously Presented) The method of claim 42 wherein the aluminum film has a grain size of approximately 0.25 microns.

44. (Previously Presented) The method of claim 42 wherein the aluminum film has a grain size of less than 0.25 microns.

45. (Previously Presented) The method of claim 42 wherein the aluminum film grains have a polycrystalline orientation.

46. (Previously Presented) The method of claim 42, further comprising forming a titanium silicide layer on the semiconductor structure prior to flowing the first titanium-containing precursor.

47. (Previously Presented) The method of claim 42, wherein the first and second titanium-containing precursors are selected from the group consisting of: titanium tetrachloride, tetrakisdimethylamido titanium and trimethylethylenediamino titanium.

48. (Previously Presented) The method of claim 42, wherein the aluminum-containing precursor is sleected from the group consisting of : trimethylaluminum (TMA), dimethylaluminum hydride (DMAH), triisobutylaluminum (TIBA), triethylaluminum (TEA), diethylaluminum hydride (DEAH), monomethylaluminum hydride (MMAH), dimethylethylalane (DMEHA1) and dimethylethylamide (DMEHA2).

49-51. (Canceled)

52. (Previously Presented) A method for forming a transistor with an interconnect via, defined by a surface substantially free of voids, comprising:

etching an interconnect into silicon oxide or borophosphosilicate glass to define a semiconductor structure defining an interconnect via comprising an active region of a transistor;

exposing the semiconductor structure to a titanium-containing precursor gas flow at a rate of 10 to 100 sccm and nitrogen gas at a flowrate of 10 to 1000 sccm and forming a titanium nitride film on the semiconductor structure;

exposing the semiconductor structure with the titanium nitride film to a titanium-containing precursor gas and to ammonia or nitrogen trifluoride gas at a flowrate of 10 to 1000 sccm and forming a second titanium nitride film having a polycrystalline orientation wherein the second layer of titanium nitride comprises a polycrystalline orientation that comprises a mixture of 1:1 of <111> and <200> oriented grains; and

exposing the semiconductor structure with the second titanium nitride film having a polycrystalline orientation to an aluminum-containing organometallic precursor to form an aluminum interconnect wherein the aluminum has a small grain size.

53. (Previously Presented) The method of claim 52 wherein the via formed has a high aspect ratio.

54. (Previously Presented) The method of claim 53 wherein the aspect ratio that is greater than about 5:1.

55. (Previously Presented) The method of claim 53 wherein the aspect ratio is about 8:1.

56. (Previously Presented) The method of claim 53 wherein the thickness of the titanium nitride film is about 100 to 200 angstroms for a 0.25 micron interconnect via.

57. (Previously Presented) The method of claim 52 wherein the aluminum-containing organometallic presursor is selected from the group consisting of trimethylaluminum,

dimethylaluminum hydride, triisobutylaluminum, triethylaluminum, diethylaluminum hydride, monomethylaluminum hydride, dimethylethylaminealane, and dimethylethylamide.

58. (Previously Presented) The method of claim 52 wherein the thickness of the aluminum is about 2000 to 3000 angstroms.